A CHECKLIST OF THE SPONTANEOUS FLORA GROWING IN CONCEPCION CITY, CHILE: ORIGIN, GROWTH HABIT AND WEED STATUS

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ABSTRACT

A checklist of the spontaneous flora growing in urban habitats in the City of Concepción, Chile is presented. Results indicate a prevalence of introduced species mainly of European origin and annuals. Families Poaceae, Asteraceae and Fabaceae gathered most of the species. Proportions of alien species are higher than those commonly reported for other cities in the world.

Key words: Checklist, Urban Flora, Concepción, Chile.

RESUMEN

Listado de las plantas espontáneas de Concepción, Chile: origen, hábito de crecimiento y estatus como maleza. Se presenta un listado de las plantas espontáneas que crecen en hábitat urbanos de la ciudad de Concepción. Los resultados indican una predominancia de especies anuales introducida de origen europeo. Las familias Poaceae, Asteraceae y Fabaceae representan la mayoría de las especies. La proporción de especies introducidas es mayor que el promedio reportado para otras ciudades a nivel mundial.

Palabras clave: Listado, Flora Urbana, Concepción, Chile.

INTRODUCTION

The introduction of plant species in Chile can be traced well back into the 19th century (Matthei 1995; Fuentes *et al.* 2007) in connection not only with the development of agriculture but also as ornamentals or medicinal plants. It has been proposed that a first phase of increment in the number of alien species arriving and establishing in Chile was followed by a stabilization phase which could eventually turn into a new wave of introductions depending on the increments in trade with foreign countries (Fuentes *et al.* 2007).

Eventhough references accumulate in the scientific literature about the importance of urban habitats for the maintenance of alien plant populations (Sukopp 1990) they have not been addressed for Chilean cities and this article is a contribution in a series dedicated to the subject.

Cities keep a peculiar spontaneous flora on urban habitats which usually are under various degrees of disturbance (Sukopp 1990). Eventhough according to the literature introduced species tend to predominate over natives, the relative proportion between them can be very variable. Also levels of diversity and similarity among cities and rural areas fluctuate in magnitude but tend to maintain distinct patterns of floristic composition. Habitat diversity in cities depends on availability of open, abandoned fields or unused sectors on public areas or at the border in contact with rural areas (Pickett *et al.* 2001; Kühn *et al.* 2004). Habitat diversity explains the variety of life forms and ecological strategies present on urban flora. (Rebele 1994; McDonnell and Pickett 1990; Pyšek *et al.* 2004a).

To our knowledge, species list from strict urban habitats in Chilean cities have not yet been published so far, but they have been indirectly mentioned (*e.g*. Navas 1973; Matthei 1995). We present here a checklist of plants growing spontaneously in Concepción, Chile compiled on a previous investigation on alien plants. To their taxonomic status we added their origin and relative status as a weeds as classified in Matthei (1995). This is partial result of a broader research on alien species diversity (Settele *et al*. 2005)

METHODS

As study area we included street borders and all sort of abandonned fields whitin the urban area in Concepción, Chile (36°46´22" S, 73°3´47" W); we excluded those areas under evident influence of neighbour rural areas at the city border. Specifically we surveyed urban habitats within the area defined by the Biobío river (southern limit), Villa Universitaria (northern limit), Cerro Caracol - Collao (eastern limit) and Jorge Alessandri Avenue (western limit); More specific cartographic details of Concepcion can be found in the web page http://www.cona.cl/scor/spanish/figuras/map.jpg

Sampling using Braun-Blanquet's aproximation (Shimwell 1972) was performed between October - December 2006 only for these sites with spontaneous vegetation without evidences of recent disturbance (*e.g*. cutting, burning, trampling), were included; parks, gardens, lakes and any kind of cultivated areas were excluded (criteria after Pyšek *et al*. 2004b). Additional species on areas sourrounding sampling sites or those observed occasionally were also registered. Taxonomic nomenclature follows Marticorena and Quezada (1985), Matthei (1995) and Herbarium at Universidad de Concepción (CONC) where reference material was deposited.

RESULTS

On Annex 1 a list is presented of the plant species growing spontaneously in Concepción recorded during this investigation.

We recorded 171 plant taxa growing spontaneousy in Concepcion Chile, 128 (75%) of them are Dicotyledoneous, 43 (25%) Monocotyledoneous. More than 50% of the species belong to Poaceae, Asteraceae y Fabaceae. 112 species (65.5%) are European in origin, 41 (24%) are american (with 17 native species) and only 18 (10.5%) are from a different origin.

Eighty eight species (51%) are annual and 68 (40%) are perennials most of them herbaceous, only: *Cestrum parqui* (Parqui), *Chenopodium multifidum* (Paico), *Chusquea quila* (Quila), *Lupinus arboreus* (Chocho), *Muehlenbeckia hastulata* (Voqui negro), *Rubus ulmifolius* (Zarza), *Teline monspessulana* (Retamilla) and *Ulex europaeus* (Espinillo) are woody shrubby perennials. Seven (4%) species are biennial and eight species (5%) are facultative annual, biennal or perennial.

DISCUSSION

Our results indicate more than 90% of the spontaneous flora of Concepción as introduced species, this is a very high rate when compared with the average 40% reported by Pyšek (1998 a) for 54 cities in Central Europe or the 20 % for Ciudad de Mexico one of he most densely populated cities in the world.

Two thirds of the introduced species in Concepción are European in origin; it is necessary to remark however that for an important number of European species its origin is not clear and eventhough are commonly attributed to Europe they could have been originated in Asia. This number surpass the

59 % European informed by Matthei (1995; 59.3%, Table II, p. 15) for weeds in the whole country. The four families with higher number of species are the same recognized by Pyšek (1998 b) as the four most important for alien floras in the world. The prevalence of European taxa has been connected with the colonization history and development of agriculture in Chile (Fuentes *et al*. 2007; Matthei 1995).

The remarkable high proportion of annuals is usual in areas under frequent disturbance (D'Antonio and Hobbie 2005) and Mediterranean-climate regions of the world (Arroyo *et al*. 1995; Groves *et al*. 1991). Predominance of European taxa may be due to the colonization history and development of agriculture in Chile (Fuentes *et al*. 2007, Matthei 1995). Main explicative factors seem to be related with:

a) The extreme degree of intervention of the landscape originally consisting of wetlands and sclerophyllous vegetation. Consistent available evidence shows that increments in the degree of urbanization is frequently accompanied by lower levels in humidity and increments in temperature due to the «heat island» effect (Pickett *et al*. 2001; Capella de Steffens *et al*. 2001; Celis *et al*. 2007). All these factors favour aloctone species, better adapted to those conditions, instead of native species.

b) The most important seaport complex in Southern Chile, Talcahuano, is located less than 10 km from Concepción. Similar situations have been offered as explanation for increments in alien species in European cities (see Kühn *et al*. 2004 for example) and weeds in Chile (Matthei 1995).

It remains to be investigated if similar patterns of floristic composition exist in other Chilean cities. Particularly appealing are questions dealing with the nature and dynamics of the relationship with the rural environment. That information is badly needed for sound planning of urban areas and biological conservation.

ACKNOWLEDGEMENTS

We would like to acknowledge financial support of the European Integrated Project ALARM: *Assessing large-scale environmental risk for biodiversity with tested methods* (GOCE-CT-2003-506675) (Settele *et a*l. 2005).

REFERENCES

ARROYO, M.T., ZEDLER, P.H. and FOX, M.D. (Eds.)
1995 Ecology and Biogeography of Mediterranean Ecosystems in Chile, California, and Australia. Springer – Verlag. New York. 455 p.

D'ANTONIO, C.M. and HOBBIE, S.E.
2005 Plant species effects on ecosystem processes. Insights from invasive species. In: D.F.Sax, J.J.Stachowicz & S.D.Gaines.eds. Species Invasions. Insights Into Ecology Evolution, and Biogeography. Sinauer Associates, Inc. Publishers Sunderland, Massachusetts. 495 p.

FUENTES, N., UGARTE, E., KÜHN I. and KLOTZ, S.
2008 Alien plants in Chile: inferring invasion periods from herbarium records. Biological Invasions 10: 649-657

GROVES, R.H. and DI CASTRI, F.(Eds.)
1991 Biogeography of Mediterranean Invasions. Cambridge University Press. Cambridge. 485 p.

KÜHN, I., BRANDL, R. and KLOTZ, S.
2004 The flora of German cities is naturally species rich. Evolutionary Ecology Research 6: 749–764

MCDONNELL, M.J. and PICKETT, S.T.A.
1990 The study of ecosystem structure and function along urban-rural gradients: an unexploited opportunity for ecology. Ecology 71:1231-1237

MARTICORENA, C. and QUEZADA, M.
1985 Catálogo de la flora vascular de Chile. Gayana Botánica 42(1-2):157 p.

MATTHEI, O.
1995 Manual de las malezas que crecen en Chile. Alfabeta Impresores, Santiago, Chile. 545p.

NAVAS, L.
1976 Flora de la Cuenca de Santiago de Chile. Tomo 2. Ediciones de la Universidad de Chile, Santiago, Chile. 559 pp.
PICKETT, S.T.A, CADENASSO, M.L., GROVE, J.M., NILON, C.H., POUYAT, R.V., ZIPPERER, W.C. and COSTANZA R.
2001 Urban Ecological Systems: Linking terrestrial ecological, physical, and socioeconomic components of metropolitan areas. Annual Review of Ecological Systems 32:127-157.
PYŠEK, P.
1998a Alien and native species in Central European urban floras: A quantitative comparison. Journal of Biogeography 25:155–163
PYŠEK, P.
1998b Is there a taxonomic pattern to plant invasions? Oikos 82: 282-294.
PYŠEK, P., CHOCHOLOUŠKOVÁ, Z., PYŠEK, A., JAROŠÍK, V. and CHYTRÝ, M.
2004a Trends in species diversity and composition of urban vegetation over three decades. Journal of Vegetation Science 15(6): 781–788
PYŠEK, P., RICHARDSON, D.M., REJMÁNEK M., WEBSTER, G., WILLIAMSON, M. and KIRSCHNER, J.
2004b Alien plants in checklists and floras: towards better communication between taxonomists and ecologists. Taxon 53:131–143.
REBELE, F.
1994 Urban ecology and special features of urban ecosystems. Global Ecology and Biogeography Letters 4: 173–. 187
SETTELE, J., HAMMEN, V., HULME, P.E., KARLSON, U., KLOTZ, S., KOTARAC, M., KUNIN, W.E., MARION, G., O'CONNOR, M., PETANIDOU, T., PETERSEON, K., POTTS, S., PRITCHARD, H., PYŠEK, P., ROUNSEVELL, M., SPANGENBERG, J., STEFFAN-DEWENTER, I., SYKES, M.T., VIGHI, M., ZOBEL, M. and KÜHN, I.
2005 ALARM: Assessing large scale environmental risks for biodiversity with tested methods. GAIA - Ecological Perspectives in Science, Humanities, and Economics 14: 69-72.
SHIMWELL, D.
1972 The description and classification of vegetation. Ed. Sidewick and Jackson, Londres, UK. 321 pp
SUKOPP, H., HEJNÝ, S., and KOWARIK, I. (Eds.)
1990 Urban Ecology. SPB Academic Publishers, The Hague. 113–129 pp.

Trabajo recibido: 18 abril 2008
Trabrajo aceptado: 7 agosto 2008

ANNEX 1. List of plant species growing spontaneously in Concepción, Chile recorded in this investigation, their family, origin, life-cycle and weed status.

Species	**Family**	**Origin**	**Life-Cycle**	**Status**
Agrostis capillaris L.	Poaceae	Eurasia	Perennial	Main weed
Aira caryophyllea L.	Poaceae	Europe	Annual	Flora
Alisma lanceolatum Whit.	Alismataceae	Europe	Perennial	Serious weed
Amaranthus deflexus L.	Amaranthaceae	South America	Annual-Perennial	Common weed
Anagallis arvensis L.	Primulaceae	Europe	Annual	Common weed
Anthemis cotula L.	Asteraceae	Europe	Annual	Serious weed
Arctoteca calendula (L.) Levyns	Asteraceae	Africa	Annual	Common weed
Aristotelia chilensis (Mol.) Stuntz	Elaeocarpaceae	Native	Perennial	Main weed
Arrhenatherum elatius var bulbosum (Willd.) Spenn.	Poaceae	Europe	Perennial	Serious weed
Avena barbata Pott ex Link.	Poaceae	Europe	Annual	Serious weed
Avena fatua L.	Poaceae	Europe	Annual	Main weed
Avena sativa L.	Poaceae	Europe	Annual	Flora
Bidens aurea (Aiton) Sherff.	Asteraceae	North America	Perennial	Serious weed
Brassica nigra Koch	Brassicaceae	Europe	Annual	Main weed
Brassica rapa L.	Brassicaceae	Europe	Annual	Serious weed
Briza maxima L.	Poaceae	Europe	Annual	Common weed
Briza minor L.	Poaceae	Europe	Annual	Common weed
Bromus catharticus Vahl.	Poaceae	South America	Annual, Biannual or Perennial	Common weed
Bromus diandrus Roth.	Poaceae	Europe	Annual	Main weed
Bromus hordaceus L.	Poaceae	Europe	Annual	Main weed
Bromus scoparius var. villiglumis Maire & Weill.	Poaceae	Europe	Annual	Common weed
Bromus scoparius var. scoparius L.	Poaceae	Europe	Annual	Common weed
Buddleja globosa Hope	Budlejaceae	Native	Perennial	Flora
Calystegia sepium (L.) R.Br.	Convolvulaceae	Cosmopolitan	Perennial	Flora
Capsella bursa-pastoris (L.) Medik.	Brassicaceae	Europe	Annual	Common weed
Carduus pycnocephalus L.	Asteraceae	Europe	Annual	Common weed
Cerastium glomeratum Thuill.	Caryophyllaceae	Europe	Annual	Common weed
Cestrum palqui L'Herit.	Solanaceae	South America	Perennial	Weed
Chamaemelum mixtum (L.) All.	Asteraceae	Europe	Annual	Serious weed
Chamomilla suaveolens (Pursh) Rydb.	Asteraceae	North America	Annual	Common weed
Chenopodium album L.	Chenopodaceae	Europe	Annual	Serious weed
Chenopodium multifidum L.	Chenopodaceae	Native	Perennial	Common weed
Chusquea quila Kunth.	Poaceae	Native	Perennial	Flora
Cichorium intybus L	Asteraceae	Europe	Annual- Biannual	Serious weed

Cirsium vulgare (Savi) Ten.	Asteraceae	Europe	Annual	Main weed
Conium maculatum L.	Apiaceae	Europe	Annual	Common weed
Convolvulus arvensis L.	Convolvulaceae	Europe	Perennial	Serious weed
Conyza bonariensis (L.) Cronq.	Asteraceae	South America	Annual	Common weed
Conyza floribunda Kunth.	Asteraceae	Native	Annual	Common weed
Coronopus didymus (L.) Smith.	Brassicaceae	South America	Annual- Biannual	Main weed
Cotula australis (Sieb.) Hook.	Asteraceae	New Zeland	Annual	Common weed
Cotula coronopifolia L.	Asteraceae	Africa	Perennial	Flora
Crepis capillaris (L.) Wallr.	Asteraceae	Europe	Annual	Main weed
Crepis pulchra L.	Asteraceae	Europe	Annual	Common weed
Cymbalaria muralis Gaertn.Mey.& Scherb.	Scrophulariaceae	Europe	Perennial	Flora
Cynodon dactylon (L.) Pers.	Poaceae	Africa	Perennial	Main weed
Cynosurus echinatus L.	Poaceae	Europe	Annual	Main weed
Cyperus eragrostis Lam.	Cyperaceae	Europe	Annual	Serious weed
Dactylis glomerata L.	Poaceae	Europe	Perennial	Weed
Datura ferox L.	Solanaceae	North America	Perennial	Main weed
Daucus carota L.	Apiaceae	Europe	Biannual	Main weed
Digitaria sanguinalis (L.) Scop.	Poaceae	Pantropical	Annual	Serious weed
Echinochloa crus-galli (L.) Beauv.	Poaceae	Pantropical	Annual	Serious weed
Echium plantagineum L.	Boraginaceae	Europe	Biannual	Serious weed
Echium vulgare L.	Boraginaceae	Europe	Biannual	Serious weed
Eleusine tristachya (Lam.) Lam.	Poaceae	South America	Perennial	Main weed
Epilobium ciliatum Raff.	Onagraceae	America	Perennial	Common weed
Erodium cicutarium (L.) L'Hér.	Geraniaceae	Europe	Annual	Common weed
Erodium moschatum (L.)L´Hér.	Geraniaceae	Europe	Annual	Common weed
Eschscholzia californica Cham.	Papaveraceae	North America	Perennial	Common weed
Euphorbia helioscopia L.	Euphorbiaceae	Europe	Annual	Common weed
Euphorbia peplus L.	Euphorbiaceae	Europe	Annual	Common weed
Euphorbia serpens Kunth *in* Humb	Euphorbiaceae	America	Perennial	Serious weed
Festuca arundinacea Schreb.	Poaceae	Europe	Perennial	Weed
Foeniculum vulgare Miller	Apiaceae	Europe	Biannual	Common weed
Fumaria agraria Lag.	Fumariaceae	Europe	Perennial	Common weed
Galega officinalis L.	Fabaceae	Europe	Perennial	Serious weed
Galinsoga parviflora Cav.	Asteraceae	Native	Annual	Serious weed
Geranium core-core Steud.	Geraniaceae	Native	Annual	Leed
Geranium rotundifolium L.	Geraniaceae	Europe	Annual	Flora
Holcus lanatus L.	Poaceae	Europe	Annual	Common weed

Hordeum murinum L.	Poaceae	Europe	Annual	Main weed
Hypericum perforatum L.	Hypericaceae	Europe	Perennial	Serious weed
Hypochaeris radicata L.	Asteraceae	Europe	Perennial	Main weed
Juncus bufonius L.	Juncaceae	Cosmopolitan	Annual	Main weed
Juncus effusus L.	Juncaceae	Cosmopolitan	Annual	Weed
Lactuca serriola L.	Asteraceae	Europe	Annual- Biannual	Main weed
Lapsana communis L.	Asteraceae	Eurasia	Annual, Biannual or Perennial	Main weed
Leontodon saxatilis Lam.	Asteraceae	Europe	Perennial	Common weed
Lepidium spicatum Desv.	Brassicaceae	Native	Annual	Flora
Lepidium strictum (S. Watson) Rattan	Brassicaceae	Native	Annual	Common leed
Linum usitatissium L.	Linaceae	Europe	Annual	Common leed
Lolium multiflorum Lam.	Poaceae	Europe	Annual	Main weed
Lolium perenne L.	Poaceae	Europe	Perennial	Common weed
Lotus corniculatus L.	Fabaceae	Europe	Perennial	Weed
Lotus tenuis Waldst & Kit	Fabaceae	Europe	Perennial	Weed
Lotus uliginosus Schkuhr.	Fabaceae	Europe	Perennial	Weed
Lupinus arboreus Sims.	Fabaceae	North America	Perennial	Flora
Malva nicaeensis All.	Malvaceae	Europe	Perennial	Weed
Medicago arabica (L.) Huds.	Fabaceae	Europe	Annual	Weed
Medicago lupulina L.	Fabaceae	Europe	Annual	Common weed
Medicago minima (L.) L.	Fabaceae	Europe	Annual	Common weed
Medicago polymorpha var. brevispina L. (Benth.)	Fabaceae	Europe	Annual	Common weed
Medicago polymorpha var. polymorpha L.	Fabaceae	Europe	Annual	Common weed
Melilotus indicus (L.) All.	Fabaceae	Eurasia	Annual- Biannual	Common weed
Modiola caroliniana (L.) G. Don.	Malvaceae	North America	Perennial	Main weed
Muehlenbeckia hastulata (J.E.Sm) Johnst	Polygonaceae	Native	Perennial	Flora
Nassella neesiana (Trin. & Rupr.) Barkworth	Poaceae	Native	Annual	Flora
Nassella poeppigiana (Trin. & Rupr.) Barkworth	Poaceae	Native	Annual	Flora
Nothoscordum gracile (Aiton) Stearn	Liliaceae	South America	Perennial	Weed
Nothoscordum gramineum (Sims) Beauv.	Liliaceae	South America	Perennial	Weed
Oenothera rosea L´Hér. ex Ait.	Onagraceae	America	Perennial	Weed
Oenothera stricta Ledeb. ex Link	Onagraceae	South America	Annual	Common weed
Onopordum acanthium L.	Asteraceae	Europe	Biannual	Common weed
Ornithopus compressus L.	Fabaceae	Europe	Annual	Flora
Oxalis corniculata L	Oxalidaceae	Europe	Perennial	Common weed
Oxalis incarnata L.	Oxalidaceae	Africa	Perennial	Flora
Oxalis gyrorhiza Colla	Oxalidaceae	Native	Perennial	Flora

Oxalis micrantha Bert.	Oxalidaceae	Native	Annual	Common weed
Oxalis pes-caprae L.	Oxalidaceae	Africa	Perennial	Common weed
Papaver somniferum L.	Papaveraceae	Europe	Annual	Weed
Paspalum dasypleurum Kunze ex E. Desv.	Poaceae	South America	Perennial	Mainweed
Parentucellia viscosa (L.) Canel.	Scrophulariaceae	Europe	Annual	Mainweed
Petrorhagia prolifera (L.) P.W. Ball & Heywood	Caryophyllaceae	Europe	Annual	Common weed
Phalaris aquatica L.	Poaceae	Europe	Perennial	Flora
Phyla canescens (Kunth) Greene	Verbenaceae	South America	Perennial	Common Weed
Picris echioides L.	Asteraceae	Europe	Annual	Common weed
Piptochaetium setosum (Trin.) Arechav.	Poaceae	Native	Perennial	Flora
Plantago lanceolata L.	Plantaginaceae	Europe	Perennial	Main weed
Plantago mayor L.	Plantaginaceae	Europe	Perennial	Common weed
Poa annua L.	Poaceae	Europe	Annual	Common weed
Poa pratensis L.	Poaceae	Europe	Perennial	Weed
Polycarpon tetraphyllum (L.) L.	Caryophyllaceae	Europe	Annual	Common weed
Polygonum aviculare L.	Polygonaceae	Asia	Annual	Serious weed
Polygonum persicaria L.	Polygonaceae	Europe	Annual	Serious weed
Polypogon australis Brongn.	Poaceae	Native	Perennial	Flora
Polypogon viridis (Gouan) Breistr.	Poaceae	Europe	Perennial	Common weed
Portulaca oleracea L.	Portulacaceae	Europe	Annual	Main weed
Prunella vulgaris L:	Lamiaceae	Europe	Perennial	Main weed
Ranunculus muricatus L	Ranunculaceae	Europe	Perennial	Common weed
Ranunculus repens L.	Ranunculaceae	Europe	Perennial	Main weed
Raphanus sativus L.	Brassicaceae	Europe	Annual	Serious weed
Rapistrum rugosum (L.) All.	Brassicaceae	Europe	Annual	Serious weed
Rubus ulmifolius Schott	Rosaceae	Europe	Perennial	Serious weed
Rumex acetosella L.	Polygonaceae	Cosmopolitan	Perennial	Serious weed
Rumex crispus L.	Polygonaceae	Europe	Perennial	Main weed
Rumex maricola Remy.	Polygonaceae	Native	Perennial	Flora
Rumex obtusifolius L.	Polygonaceae	Europe	Perennial	Common weed
Rumex pulcher L.	Polygonaceae	Europe	Perennial	Common weed
Sagina apetala Ard.	Caryophyllaceae	Europe	Annual	Common weed
Saponaria officinalis L.	Caryophyllaceae	Europe	Perennial	Common weed
Scirpus mucronatus L.	Cyperaceae	Eurasia	Perennial	Common weed
Scleranthus annus L.	Caryophyllaceae	Europe	Annual	Common weed
Senecio aquaticus Hill	Asteraceae	Europe	Annual, Biannual or Perennial	Common weed
Senecio vulgaris L.	Asteraceae	Europe	Annual	Main weed

Setaria parviflora (Lam.) Kerquélen	Poaceae	America	Perennial	Main weed
Silene gallica L.	Caryophyllaceae	Europe	Annual	Main weed
Silybum marianum (L.) Gaertner	Asteraceae	Europe	Annual	Main weed
Sisymbrium officinalis L.	Brassicaceae	Europe	Annual	Serious weed
Soliva pterosperma (Juss.) Less.	Asteraceae	South America	Annual	Flora
Sonchus asper (L.) Hill.	Asteraceae	Europe	Annual	Main weed
Sonchus oleraceus L.	Asteraceae	Europe	Annual	Main weed
Spergularia rubra (L.) Presl.	Caryophyllaceae	Europe	Annual	Main weed
Stellaria media (L.) Vill.	Caryophyllaceae	Europe	Annual	Main weed
Taraxacum officinalis Weber.	Asteraceae	Europe	Perennial	Main weed
Teline monspessulana (L.) Koch.	Fabaceae	Europe	Perennial	Serious weed
Trifolium angustifolium L.	Fabaceae	Europe	Annual	Leed
Trifolium arvense L.	Fabaceae	Europe	Annual	Weed
Trifolium dubium Sibth.	Fabaceae	Europe	Annual	Flora
Trifolium glomeratum L.	Fabaceae	Europe	Annual	Flora
Trifolium pratense L.	Fabaceae	Europe	Annual	Flora
Trifolium repens L.	Fabaceae	Europe	Perennial	Flora
Trifolium tomentosum L.	Fabaceae	Europe	Annual	Flora
Ulex europaeus L.	Fabaceae	Europe	Perennial	Serious weed
Verbascum thapsus L.	Scrophulariaceae	Eurasia	Biannual	Common leed
Verbascum virgatum Stokes.	Scrophulariaceae	Europe	Biannual	Common weed
Verbena bonariensis L.	Verbenaceae	South America	Perennial	Common weed
Veronica arvensis L.	Scrophulariaceae	South America	Perennial	Common weed
Vicia sativa L.	Fabaceae	Europe	Annual	Serious weed
Vicia villosa Roth	Fabaceae	Europe	Annual	Common weed
Vulpia myuros (L.) Gmel.	Poaceae	Europe	Annual	Common weed